ToyCraft Tales - Project Report

1.. INTRODUCTION

1.1 Project Overview

This project analyzes the number and distribution of toy manufacturers across US states from 2005 to 2016.

The goal is to provide insights into manufacturing trends using MySQL and Tableau.

1.2 Purpose

The purpose is to identify state-wise and year-wise manufacturing trends and visualize the insights using

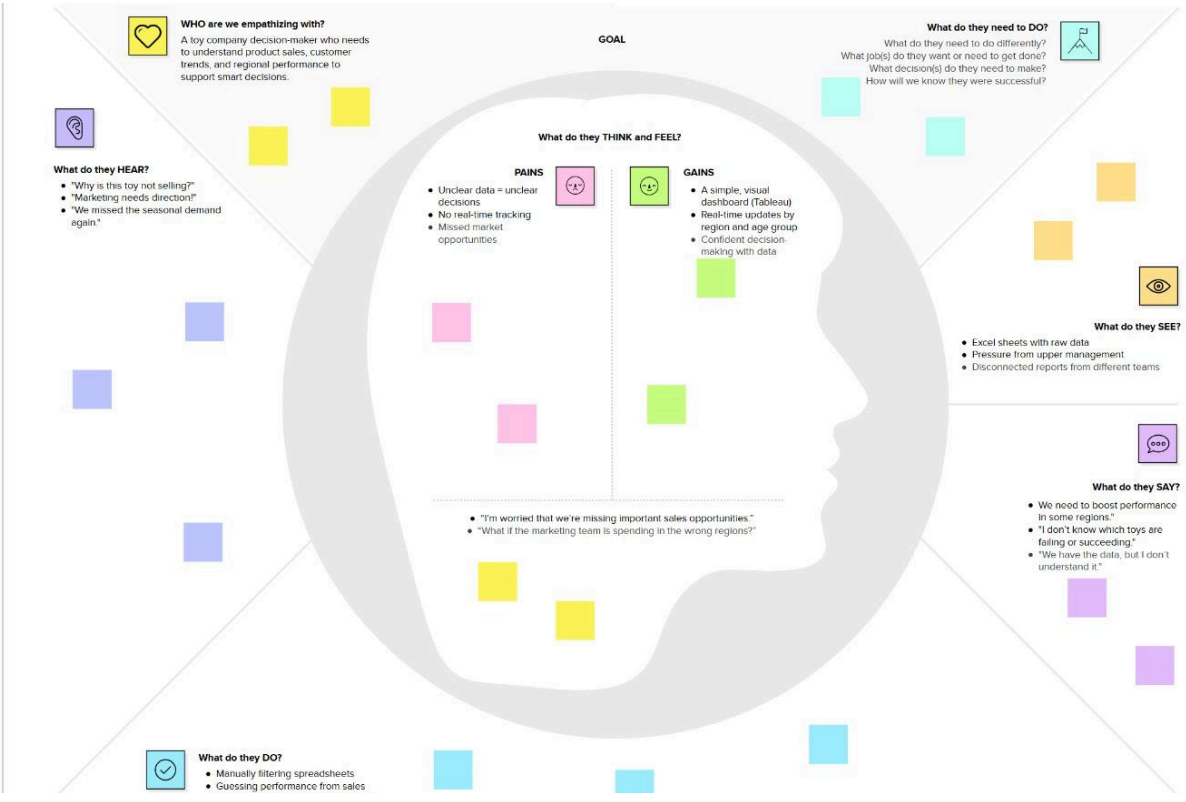
interactive dashboards.

2.. IDEATION PHASE

2.1 Problem Statement

Toy manufacturers collect a lot of data, but understanding it can be difficult. This project uses Tableau to turn complex toy data into easy, clear visuals to help improve sales, production, and decision-making.

2.2 Empathy Map Canvas



2.3 Brainstorming

1

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

⏱ 5 minutes

PROBLEM

The toy company is unable to track product performance and customer trends effectively. This project uses Tableau to analyze data and provide clear insights for better business decisions.

2

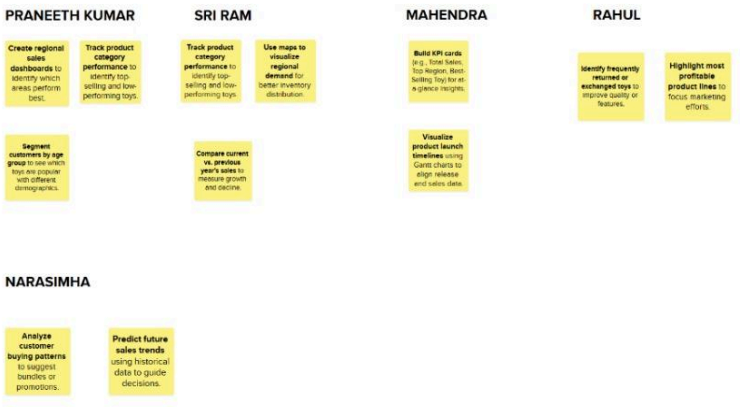
Brainstorm

Write down any ideas that come to mind that address your problem statement.

⏱ 10 minutes

TIP

You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!



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4

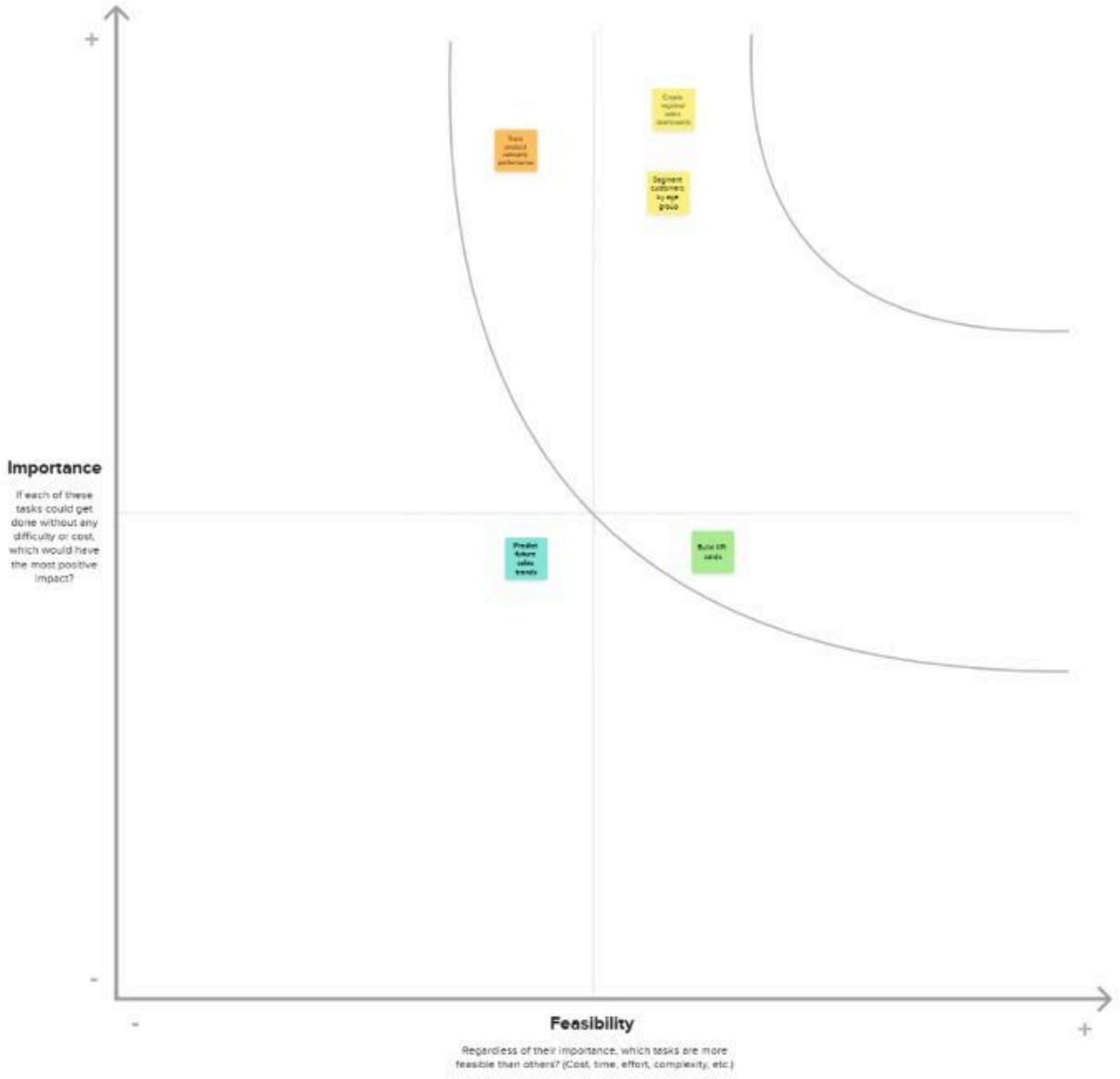
Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes

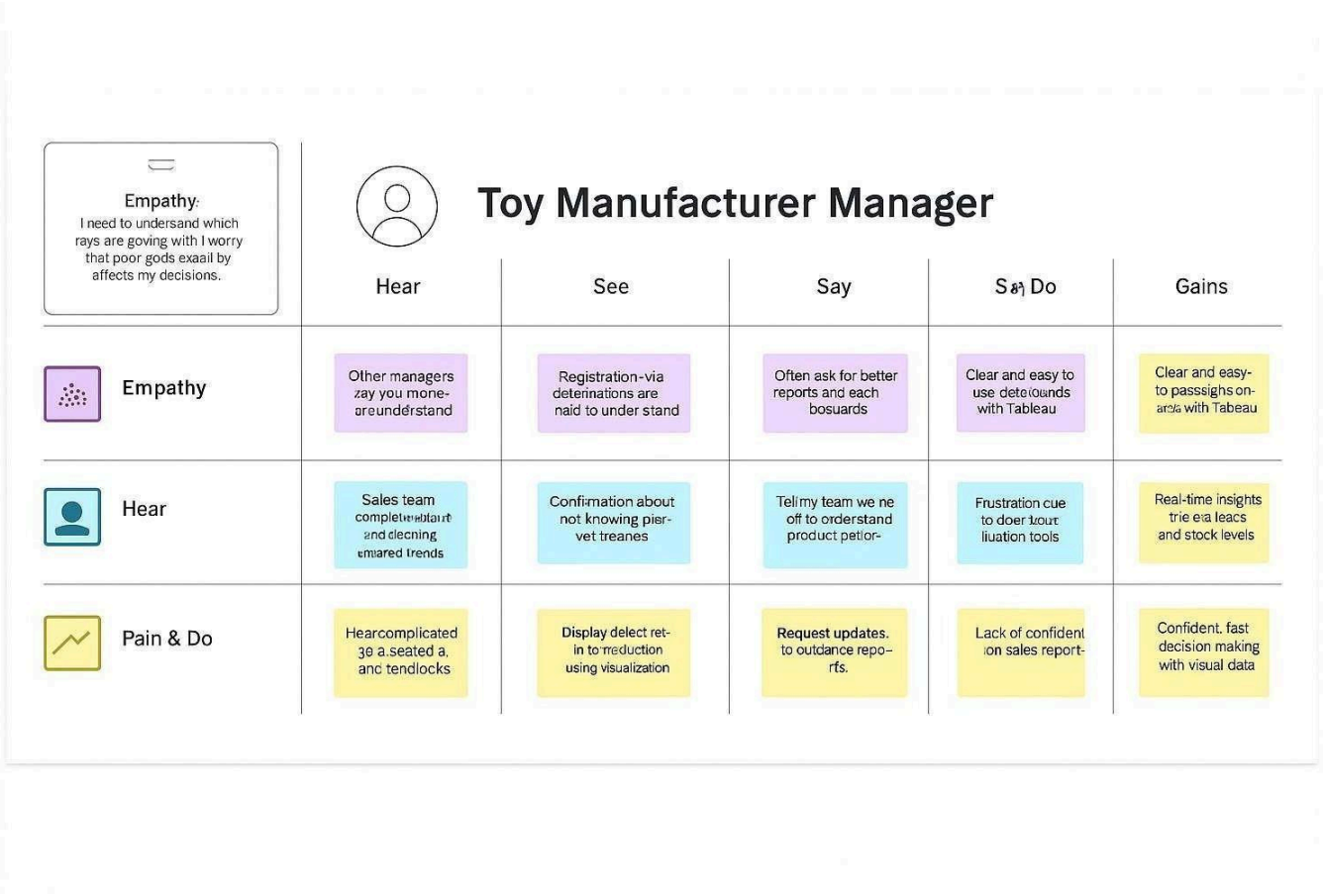
TIP

Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the **H key** on the keyboard.



3.. REQUIREMENT ANALYSIS

3.1 Customer Journey map



3.2 Solution Requirement Functional Requirements:

The following are the functional requirements of the proposed solution.

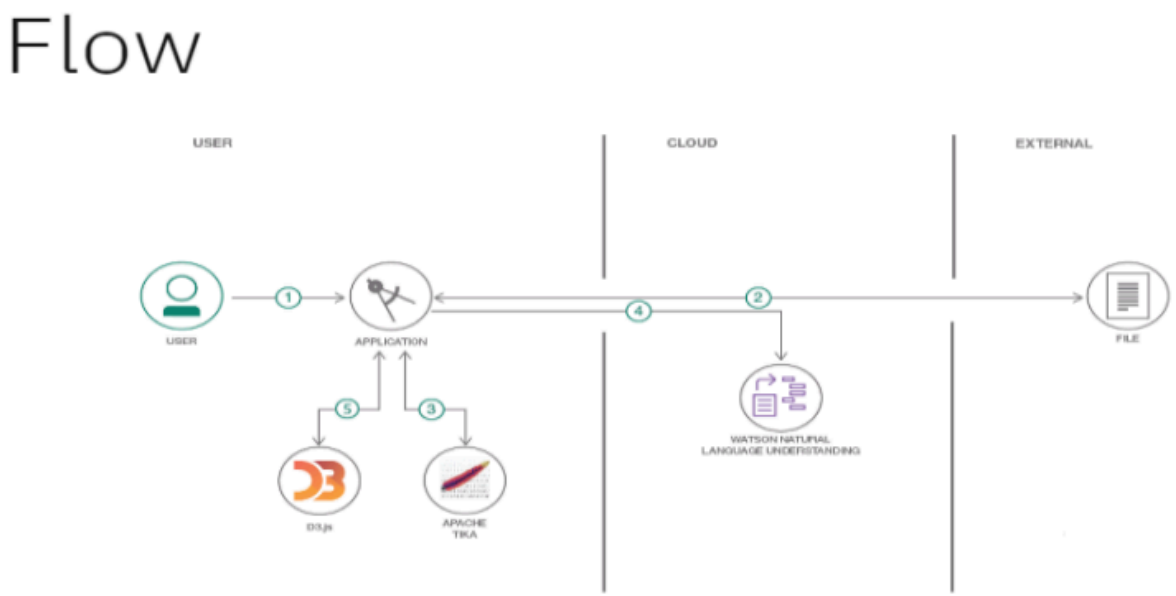
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Data Upload	Upload toy sales and production data via CSV or Excel file
FR-2	Data Visualization	Generate interactive dashboards using Tableau
FR-3	Sales Trend Analysis	Provide visual reports of sales trends and peak seasons
FR-4	Defect Rate Insights	Display defect rates in production using visualization
FR-5	Export Reports	Export visual reports in PDF and image formats

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	Easy-to-use interface with drag-and-drop features
NFR-2	Security	Secure login with password protection, role-based access
NFR-3	Reliability	Ensure system handles large datasets without crashing
NFR-4	Performance	Dashboards load within 3 seconds for optimal performance
NFR-5	Availability	System available 99.9% of the time, minimal downtime
NFR-6	Scalability	Support increased data volume as company grows

3.3 Data Flow Diagram



3.4 Technology Stack

Table-1 : Components & Technologies:

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S.No	Component	Description	Technology
1.	User Interface	Web-based dashboard to view toy analytics	HTML, CSS, JavaScript / React Js .
2.	Application Logic-1	Business logic for user interaction and filtering	Python
3.	Application Logic-2	Visualization engine	Tableau Public, Plotly.js |
4.	Application Logic-3	Data processing logic	Pandas, NumPy |
5.	Database	Storage of user data and toy manufacturing stats	MySQL
6.	Cloud Database	Cloud-hosted database for scalability	Firebase Realtime DB / Google Cloud SQL |
7.	File Storage	Uploading production reports or analytics files	Firebase Storage / AWS S3 |
8.	External API-1	User authentication	Google OAuth API
9.	External API-2	analytics or demographic enrichment	Open APIs (e.g., World Population API) |
10.	Machine Learning Model	For predicting toy demand or trends	Sklearn, TensorFlow (if ML is used) |
11.	Infrastructure (Server / Cloud)	Deployment on cloud/local system	Heroku / Vercel / Google Cloud Platform |

Table-2: Application Characteristics:

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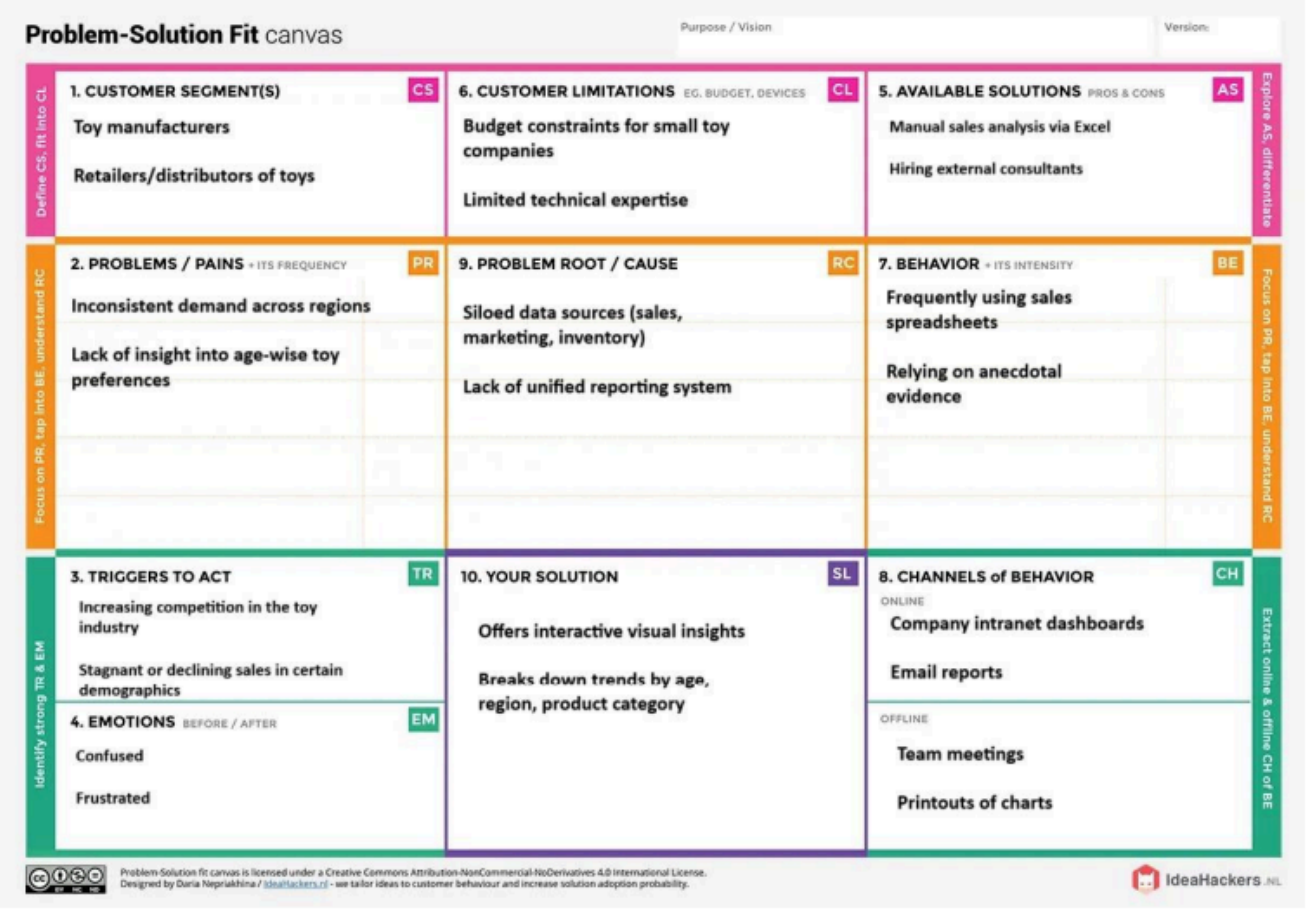
S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Used frameworks and libraries	Technology of Opensource framework
2.	Security Implementations	Authentication, data protection, secure storage	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	Designed to handle more users/data over time	Technology used
4.	Availability	Uptime and failover support	Technology used
5.	Performance	Optimized loading, API limits, caching	Technology used

4.. PROJECT DESIGN

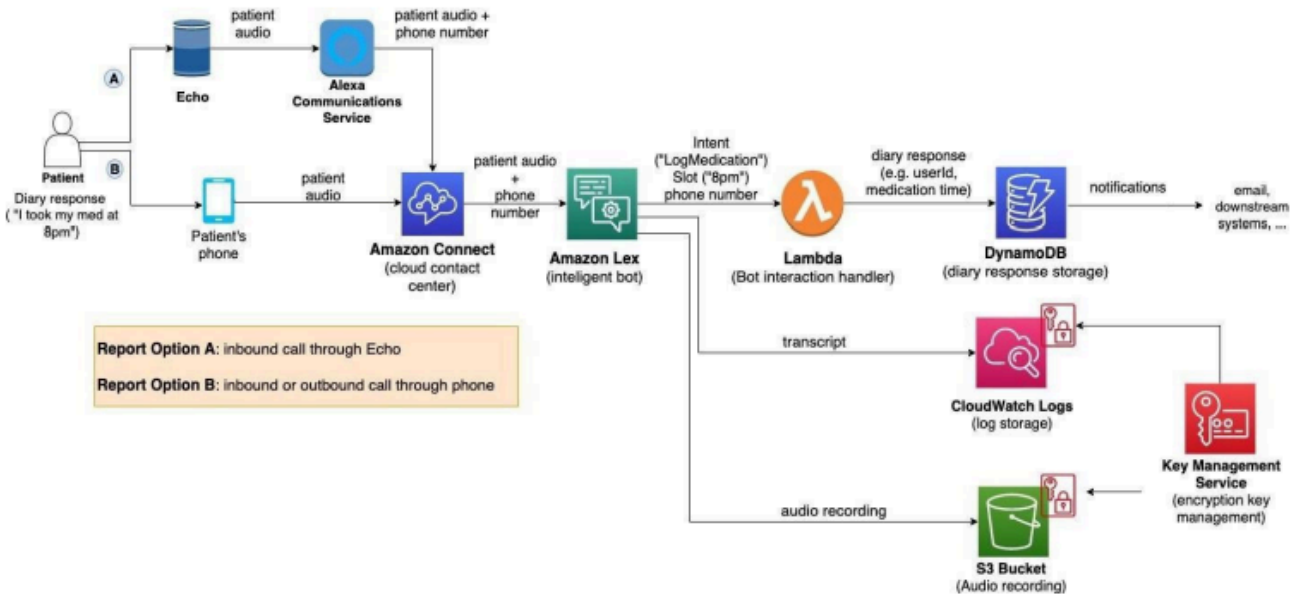
4.1 Problem Solution Fit



4.2 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Toy manufacturers lack data-driven insights into consumer preferences, regional trends, and product performance, making it difficult to make informed business decisions
2.	Idea / Solution description	Our solution leverages Tableau to analyze and visualize toy manufacturing data. It uncovers key insights related to product popularity, sales trends across demographics and regions, seasonal demand, and inventory issues.
3.	Novelty / Uniqueness	Unlike generic dashboards, our project focuses specifically on the toy industry with a storytelling approach. We blend interactive visualizations with narrative elements to guide manufacturers through actionable insights, making the analytics process more engaging and intuitive
4.	Social Impact / Customer Satisfaction	By helping toy manufacturers better understand customer needs and market demands, the solution contributes to increased customer satisfaction, reduced waste, and more relevant product offerings for children across different regions and age groups
5.	Business Model (Revenue Model)	The solution can be offered as a SaaS (Software as a Service) model where toy manufacturers subscribe to access analytics services. Additional customization and insights packages can be monetized through tiered pricing
6.	Scalability of the Solution	The model is scalable across different sectors in the toy industry and can be expanded to other consumer goods sectors. It can also accommodate real-time data integration for larger enterprises

4.3 Solution Architecture



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Data Upload	USN-1	As a Data Analyst, I can upload sales and inventory data in CSV format	3	High	Team A
Sprint-1	Dashboard View	USN-2	As a Data Analyst, I can view interactive dashboards in Tableau	2	High	Team A
Sprint-2	Trend Analysis	USN-3	As a Manager, I can analyze seasonal sales trends	3	Medium	Team B
Sprint-2	Inventory Monitoring	USN-4	As a Warehouse Staff, I receive alerts for low inventory levels	2	High	Team B
Sprint-3	Report Export	USN-5	As a Manager, I can export dashboards as PDF/image	1	Medium	Team C

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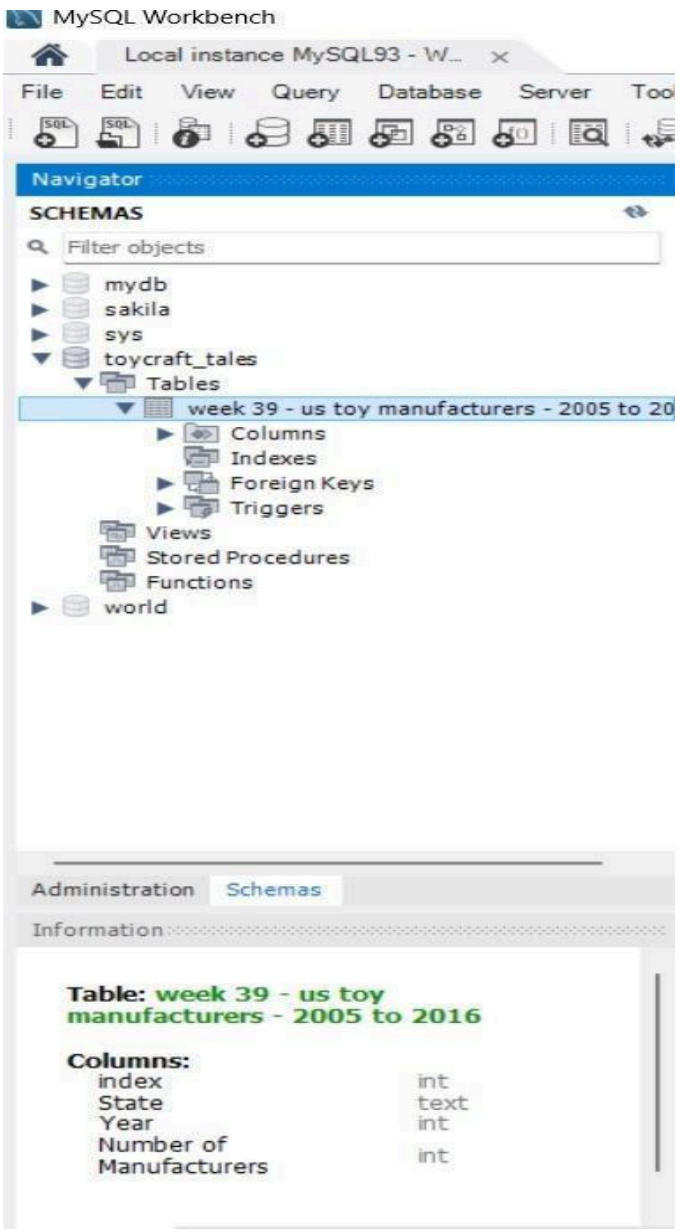
Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date	Story Points Completed
Sprint-1	5	5 Days	11 June 2025	15 June 2025	5
Sprint-2	5	5 Days	16 June 2025	21 June 2025	5
Sprint-3	1	3 Days	22 June 2025	24 June 2025	1

6.. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing



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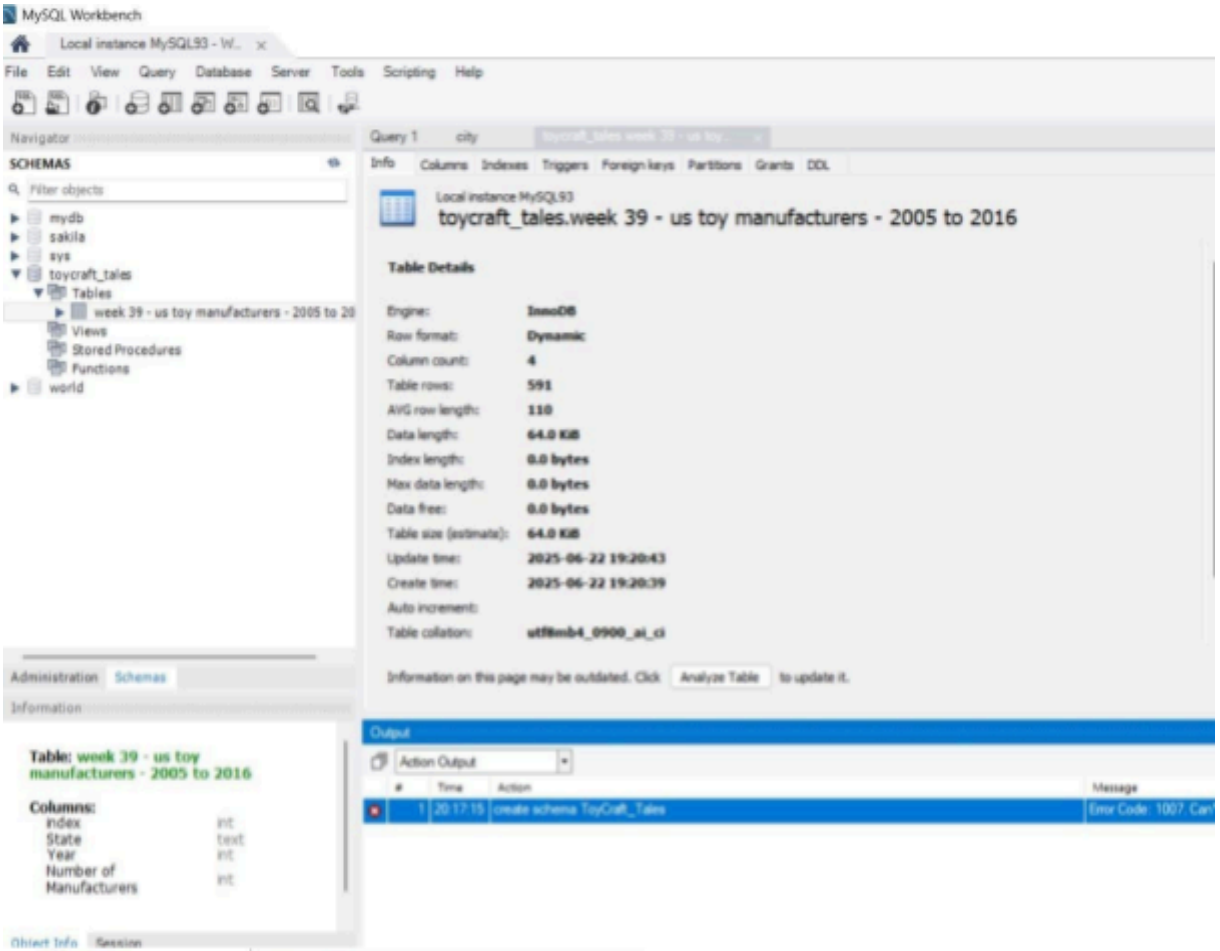
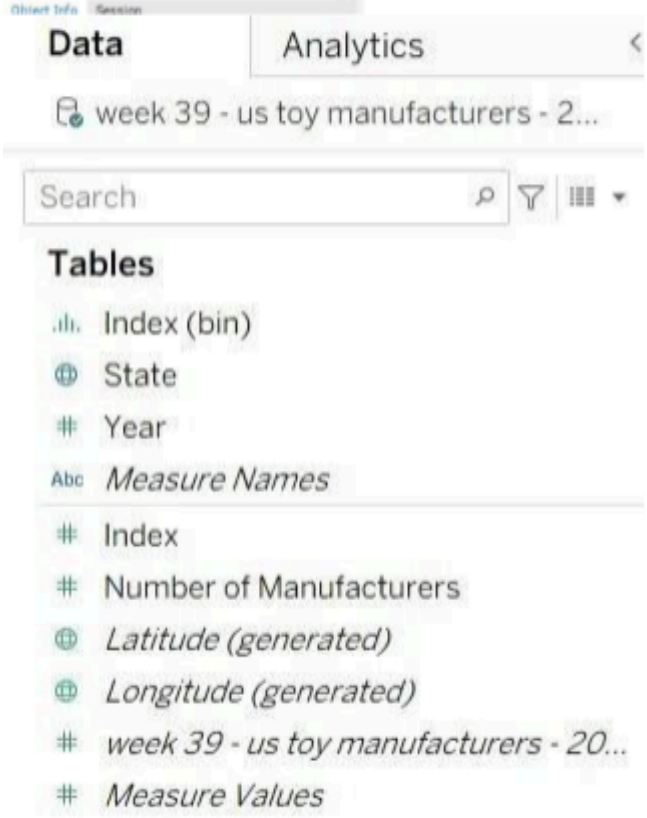
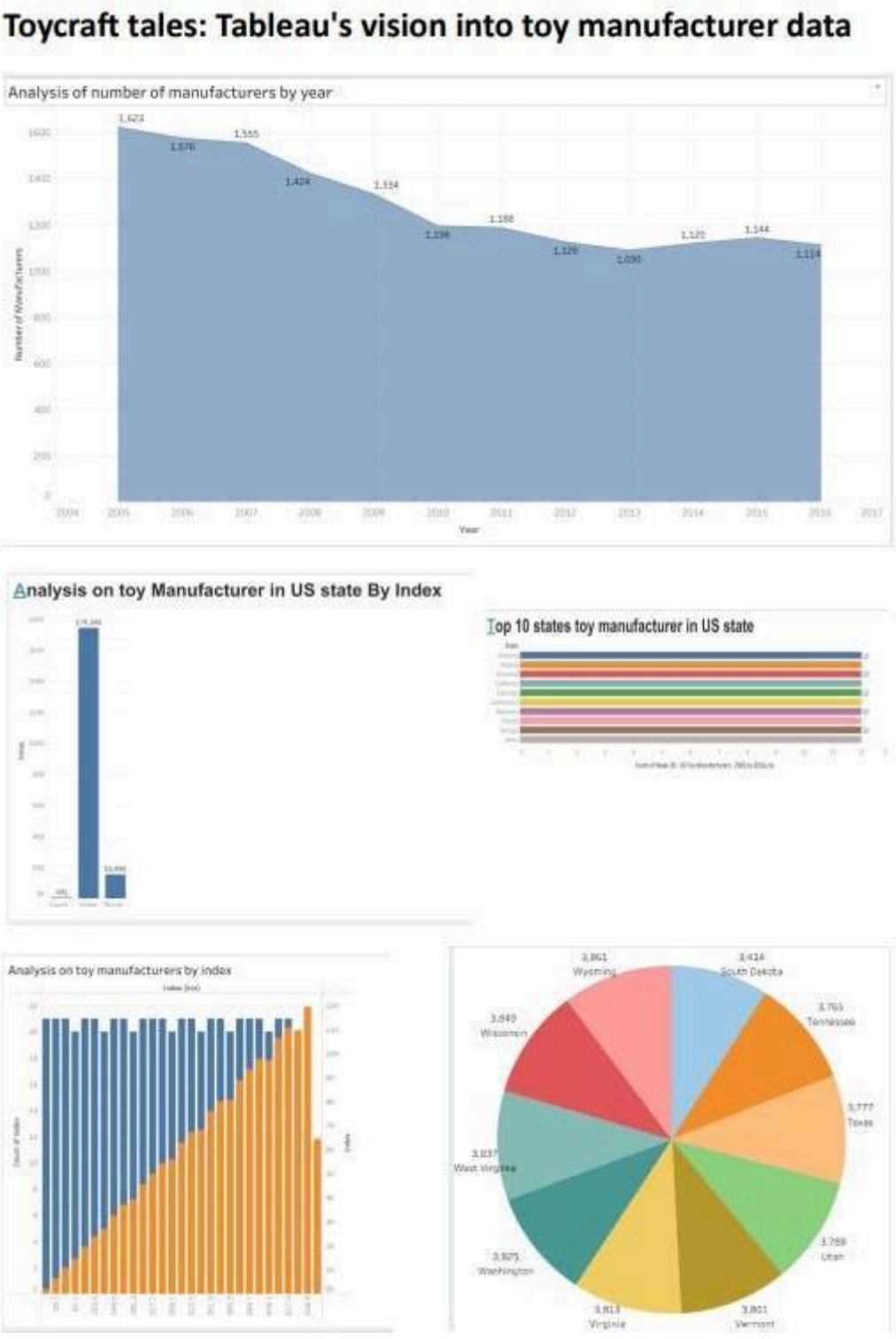




7.. RESULTS

7.1 Output Screenshots

Below are the Tableau visualization results based on the dataset:



8.. ADVANTAGES & DISADVANTAGES

Advantages:

Easy Integration: Tableau can integrate with databases like MySQL, Google Sheets, or

Cloud Storage where user data is stored, allowing seamless reporting.

User-Friendly Interface: Non-technical stakeholders can easily interpret the reports and

KPIs related to registration, confirmation success rates, etc.

Real-Time Data Monitoring: Tableau enables real-time monitoring of user activities such as

registrations through different channels (Form, Gmail, LinkedIn).

Disadvantages:

Cost Factor : Tableau licenses (especially Tableau Server or Tableau Online) can be expensive for small teams or projects with a limited budget.

Limited Interactivity with Core System : Tableau cannot trigger real-time actions like sending confirmation emails or OTPs—it can only report these processes.

Dependency on Data Source : Real-time accuracy depends on how well your databases or APIs integrate with Tableau; poor setup can delay reporting.

9. CONCLUSION

This project uses Tableau to convert complex toy sales and inventory data into simple, interactive dashboards. It helps the company track sales trends, manage stock, and make better decisions quickly. Though Tableau is not a system development tool, it is ideal for data visualization and business insights, making operations more efficient.

10. FUTURE SCOPE

Advanced Predictive Analytics: Integrate machine learning models with Tableau to predict toy sales trends, seasonal demand, and customer preferences.

Real-Time Data Integration: Connect Tableau directly to live data sources (e.g., sales platforms, inventory systems) for real-time dashboards and alerts.

Mobile Dashboard Access: Expand Tableau reports for mobile devices, enabling managers to track sales and stock anytime, anywhere.

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